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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,464	06/03/2005	Shin Takahashi	Q88254	4727

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EXAMINER	
HAUTH, GALEN H	

ART UNIT	PAPER NUMBER
1791	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/537,464	TAKAHASHI ET AL.	
	Examiner	Art Unit	
	GALEN HAUTH	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *1-8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Acknowledgement is made to applicant's amendment of claims 9 and 11 and the addition of claims 14-20. No new matter has been added. Acknowledgement is made to applicant's inclusion of units on the solubility parameter in claim 9. No new matter has been added, and the rejection under 112 has been withdrawn. The rejection under 112 for the term "Chrysanthemum-like" has also been withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 9-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caronia et al. (PN 5028330) in view of Takahashi et al. (PN 5300536) and Burk (PN 3142715) and evidenced by Yaws (NPL- Yaws' Handbook of Thermo and Physical Properties).

a. With regards to claim 9, Caronia teaches a method for applying an end cap (seal) to a filter element using a photo-initiated polymer in a transparent mold by placing the end of the filter in the mold with the polymer, exposing it to ultraviolet light to cure the polymer, and stripping the mold from the finished end cap (abstract). Caronia teaches that the filter is a cylindrical filter consisting of a circumferentially extending array of pleats tapering radially between outer tips thereof and inner tips (col 2 ln 25-28, this taken to be embraced by the limitation chrysanthemum-like cross section). Caronia teaches placing the end of the filter in the mold containing the polymer followed by UV-curing and forming an end cap (seal) (col 4 ln 42-59, placing the filter in the mold requires a groove for the filter). Caronia teaches using a photo-initiated polymer (abstract) and a glass or other transparent material for the mold (col 3 ln 31-32), but does not teach the composition of the photo-initiated polymer, or that the mold being transparent to light with a wavelength of 380 nm or higher and a solubility parameter of less than 8.5.

b. Takahashi teaches a photopolymerization composition comprising ethylenically double bond-containing compounds having photo-curing properties (col 4 ln 49-62, methacrylates are ethylenically double bond containing compounds) and a photopolymerization initiator sensitive to near ultraviolet to visible light (col 2 ln 12-16). Takahashi teaches that the composition is sensitive to light of wavelength 380 or higher by curing at wavelength 405 and 436 (col 11 ln 41). It would have been obvious to one of ordinary skill in the art at the time

the invention was made to use the photocurable composition of Takahashi as the photocurable composition of Caronia, because Takahashi acknowledges that composition taught is useful for a sealing agent (col 17 ln 49) and provides excellent thick film curability and a body high in hardness (col 17 ln 39-41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to cure using a wavelength of light higher than 380 in the formation of an end cap taught by Caronia, because Takahashi teaches curing with 405 and 436 nm light. It directly follows that, in order to photo-cure the resin composition of Takahashi at wavelength of 405 and 436 nm light, it would be imperative to use a mold that is transparent at that wavelength.

c. Burk teaches using interpolymers of hexafluoropropylene and tetrafluoroethylene as apposed to glass due to the careful handling required of glass in the casting of acrylic resins, since the interpolymers are reusable and do not require an anti-sticking agent (col 1 ln 21-40). Burk teaches that the interpolymers are substantially transparent, and as such can be used for photopolymerization (col 2 ln 56-60, this is taken to mean that the interpolymers allow permeability of light in the UV and Visible light spectrum used in photopolymerization). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the interpolymers of hexafluoropropylene and tetrafluoroethylene as apposed to glass as taught by Burk for the mold used in the process of Caronia, because Caronia acknowledges the use of other transparent materials than glass (col 3 ln 34-32 of

Caronia) and the interpolymers do not require and anti-sticking agent, are reusable, and do not require the careful handling that glass does (col 1 ln 20-26 of Burk). Burk teaches using an interpolymer of hexafluoropropylene and tetrafluoroethylene which have solubility parameters of 6.53 and 7.46 respectively as evidenced by Yaws' Handbook (Table: Solubility Parameter, Liquid Volume, Dipole Moment, and Other Properties, listed as 15.26 and 13.358 $(J/cm^3)^{(1/2)}$ which converts to the standard solubility parameters of 6.53 and 7.46 with units of $(cal/cm^3)^{(1/2)}$, and as such the mold material has a solubility parameter of less than 8.5). In fact, this is identical material which is used by applicant (see claims 10-11).

d. With regards to claims 10 and 11, Burk teaches using an ethylene fluoride-propylene copolymer in an interpolymer of hexafluoropropylene and tetrafluoroethylene (col 1 ln 37-39).

e. With regards to claims 12 and 13, Takahashi teaches that a dosage of radiation applied to the composition is between 500-10000 mJ/cm^2 which is greater than 200 mJ/cm^2 at a wavelength of 380 nm or longer as Takahashi provides an example in which the composition is irradiated with 2,510 mJ/cm^2 at 405 nm (col 11 ln 13-41, irradiation for 10 seconds with 405 nm light at 251 mw/cm^2 equals 2,510 mJ/cm^2).

f. With regards to claim 14, Takahashi teaches using a double bond containing acrylate that uses radical polymerization (col 4 ln 49-62).

g. With regards to claims 15 and 16, Takahashi teaches using a polyfunctional acrylic compound at at least 3 % by weight (Table 1).

h. With regards to claims 17 and 18, Takahashi teaches including the initiator at 10 parts by weight (col 4 ln 39).

i. With regards to claims 19 and 20, Takahashi is silent as to any viscosity for the compound; however, given that Takahashi teaches using the same composition as the applicant for the same purpose as the applicant as seen in the rejection of the claims above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the composition with a viscosity of 2000 mPa s or greater in optimization of the compound viscosity by using additives as taught by Takahashi (col 8 ln 1-3).

Response to Arguments

5. Applicant's arguments filed 10/15/2008 and 11/17/2008 have been fully considered but they are not persuasive.

a. With regards to applicant's argument that while Takahashi discloses the use of the composition as a sealant, but not specifically what the sealing agent is for and therefor not a valid combination with Caronia, given that Caronia does not require any specific UV curable compound, is not found persuasive. The combination of Caronia and Takahashi is valid given that Takahashi explicitly states the use of a sealing agent, regardless of recitation of other uses or brevity in the application, and Caronia teaches using a UV curable composition. It would have been obvious to one of ordinary skill in the art at the time the invention was

made to use a UV curable sealing agent as taught in Takahashi in Caronia which calls for a UV curable sealing agent..

b. With regards to applicant's argument that the examples in Takahashi are different from the composition of claim 7 of the applicant, the argument is not persuasive given that claim 7 is a withdrawn claim, and that Takahashi teaches using additives to adjust the viscosity.

c. With regards to applicant's argument that Burk does not disclose the use of the mold material on or in a filter element, the argument is not persuasive as the Burk reference provides the specific transparent material useful for molding UV curable resin, while Caronia provides the application specific to a filter element. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GALEN HAUTH whose telephone number is (571)270-5516. The examiner can normally be reached on Monday to Thursday 8:30am-5:00pm ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571)272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/GHH/

/Christina Johnson/
Supervisory Patent Examiner, Art Unit 1791